MECHANICAL ENGINEERING UNDERGRADUATE ADVISING

Target Audience:

Students Planning to Take Senior Design I

in

Fall 2019 Or Fall 2020

Overview

- Curriculum Planning
- Getting the most from your education

Curriculum Planning

- You should have a plan for when you are planning to take all of your courses
- Plan ahead and know your graduation date!
  - *You must meet all prerequisites and co-requisites*
  - *Senior design is a one-year sequence (Fall-Spring only)*
- Useful resources (http://www.calstatela.edu/ecst/me/curriculum)
  - *Curriculum Flowchart*
  - *Catalog (select your catalog date)*
  - *Curriculum Sheet*
- Use Degree Planner! (http://www.calstatela.edu/degreeplanner)
- Tips
  - *Don't plan to take more than 2 labs per term*
  - *Take advantage of summer!*

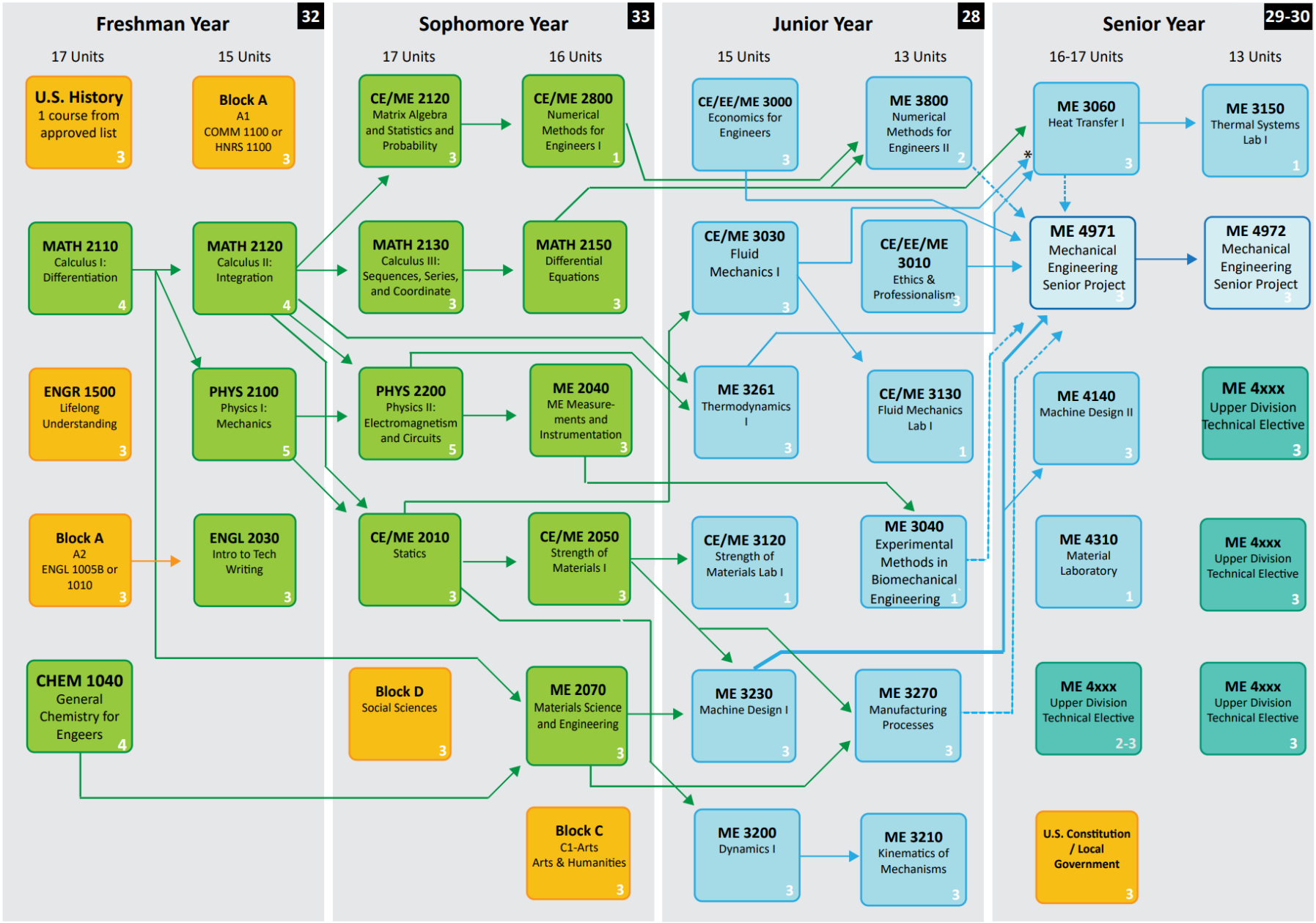
Bird's eye view of the ME curriculum

- What am I learning as an ME?
  - *Knowledge*
    - Math/Science – fundamental core knowledge!
    - Key areas in ME: Solid Mechanics and Thermal/Fluids
    - Areas of emphasis/specialization: Solid Mechanics/Machines, Thermal/Fluids, Materials, Robotics/Control, Biomechanics
  - *Skills*
    - Design, Programming, Analysis, Experimental Methods, Teamwork, Communication
- Flow Charts

California State University Los Angeles

Department of Mechanical Engineering

Bachelor of Science in Mechanical Engineering 122 Units 2017-2018



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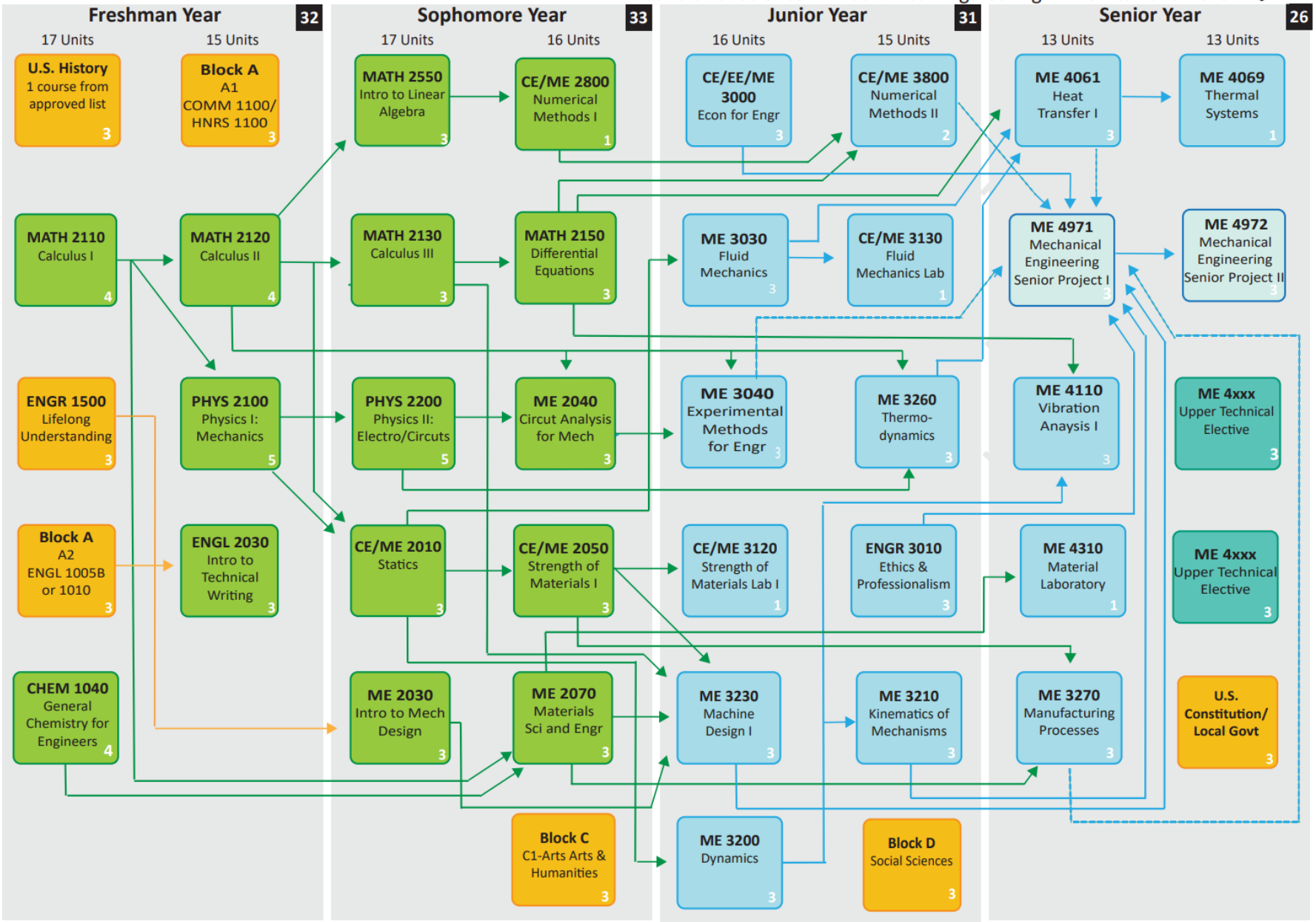


GE Requirements (Fall 2016 and later)

DEPARTMENT OF **MECHANICAL ENGINEERING**

Bachelor of Science
Mechanical Engineering
2018-2019

General Education Lower Division Requirements (21 units)

BLOCK A – Basic Subjects	
A1 - Oral Communication	COMM 1100 or HNRS 1100 (3)
A2 - Written Communication	ENGL 1005B or 1010 (3)
A3 - Critical Thinking	Fulfilled with in Major
AMERICAN INSITUTIONS	
U.S. History	1 course from approved list (3)
U.S. Constitution / Local Govt	POLS 1000 (3)
BLOCK C – Arts & Humanities (2 courses)	
C1- Arts	1 course from approved list (3)
C2 - Humanities	EE/ME 3010 (3)
BLOCK D – Social Sciences	CE/EE/ME 3000 (3)
BLOCK E – Lifelong Understanding	ENGR 1500 (3) or select 3 unit Lifelong Learning (Block E) Course

Upper division GE is met by the major!
Block B – ME 4061
Block C and D – ME 4971/2

Overlays:
Take 1 re and 1 re/d
cl met by 1500 and 4971/2
wi met by 4971/2

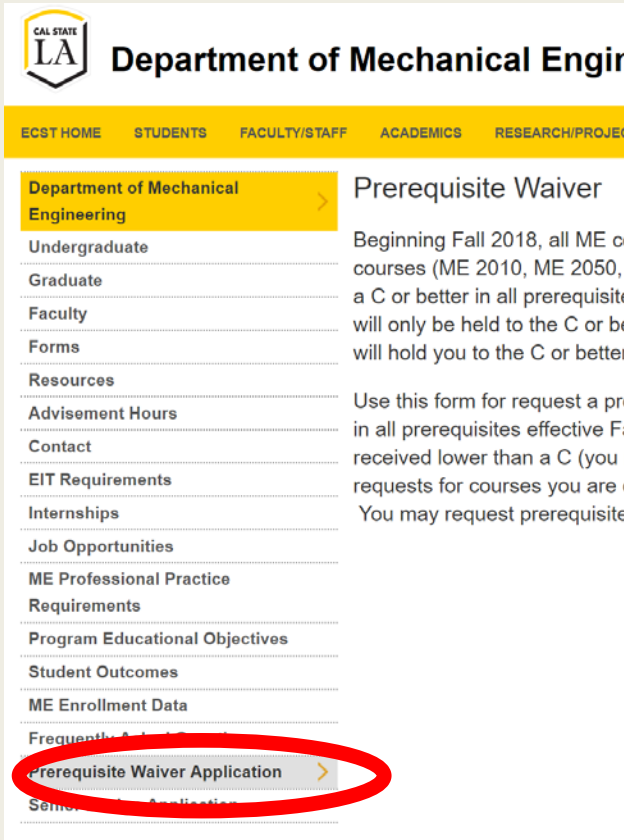
Summary of Fall 2018 Curriculum Changes

- C or better for all prerequisites (applies to all students)
- Prerequisites for some courses have been modified (applies to all students)
  - *Note: one exception is ME 2030 is only required for students on the Fall 2018 curriculum – others can waive ME 2030 as a prerequisite for ME 3230*
- Some courses have been condensed, renamed, renumbered (applies to all students)
- Revised program for students with Fall 2018 catalog (applies to all students entering in Fall 2018 as Freshman or Transfer Students or **those moved to the Fall 2018 catalog**)

Starting Fall 2018 **all** ME courses Require C or better for all prerequisites

- For courses where this is a **new requirement**:
  - *requirement will only be **enforced for prerequisite courses taken after Fall 2017***
  - *GET will enforce the requirement for all prerequisite courses*
    - For prerequisite courses taken Fall 2017 or after, you must have a C or better
    - But, if you took a prerequisite before Fall 2017 and you received lower than a C grade, you can submit a prerequisite waiver request to get a permit to take the course

Need a prerequisite waiver?



What course are you requesting a prerequisite waiver for?

ME 3230

What are the prerequisites for the course?

ME 2070, ME 2050

What grade did you earn for each prerequisite?

(ex: ME 2070: C-, ME 2050: B)

ME 2070: C- ME 2050: B

The Department will verify the information and then issue a permit.

When did you earn these grades?

(ex: ME 2070:Fall 2016, ME 2050: Fall 2017)

ME 2070: Fall 2016, ME 2050: Fall 2017

Senior design (ME 4971) prerequisites and co-requisites

- Prerequisites: ME 3000 (Econ), ME 3010 (Ethics), ME 3210 (Kinematics), and ME 3230 (Machine Design)
  - *all with C or better if taken Fall 2017 or after*
  - *Note: ME 3210 is a **required prerequisite***
- Prerequisites or Co-requisites – may be taken with ME 4971
  - *ME 3040 (Exper Methods), ME 3800 (Num Methods II), ME 3270 (Man Proc), ME 4061 (Heat Transfer I – formerly ME 3060)*

Planning to take Senior Design in Fall 2019? Look for the Senior Design Application in Early Spring!

Make sure to check the Catalog and Curriculum Sheets for other Prerequisite Changes and course number/name changes

Technical Electives in the Thermal/Fluids area have been condensed

- **ME 4040 - Propulsion Systems (3)** Prerequisites: ME 3030 and ME 3260 both with minimum C grades. Introduction to the fluid-thermodynamics of various types of aero-propulsion systems. Principles, design and applications of propellers, reciprocating engines, turbojet, turboprop and turbofan engines, rocket engines and electric propulsion systems. ***Note: Combines ME 3262 (Thermodynamics II), ME 4080 (Fluid Mechanics II), and ME 4040 (Propulsion Systems). ME 3261 (Thermodynamics I) has been renumbered and renamed to ME 3260 (Thermodynamics).***
- **ME 4070 - Heating, Ventilation, and Air Conditioning Systems (3)** Prerequisites: ME 3030, ME 3260, and ME 4061 all with minimum C grades. Psychrometry, heat loads, air conditioning and heating equipment, and air distribution. Design in engineering practice; system simulation and optimization; economic, environmental, other constraints; practical aspects of equipment selection; thermal design literature. ***Note: Combines ME 4070 (Design of Thermal Systems) and ME 4150 (Air Conditioning). ME 3060 (Heat Transfer I) has been renumbered to ME 4061.***
- **ME 4180 - Energy Systems and Sustainability (3)** Prerequisites: CHEM 1040 and ME 3260 both with minimum C grades. Existing and future energy-conversion systems with an emphasis on sustainability. Thermodynamics and transport processes applied to energy-conversion systems. Political, economic, and ethical complications associated with energy technologies. Systems using fossil fuels, nuclear, and renewable sources are discussed. ***Note: Combines ME 4160 (Energy Systems) and ME 4180 (Renewable Energy and Sustainability). ME 3261 (Thermodynamics I) has been renumbered and renamed to ME 3260 (Thermodynamics).***

Fall 2018 Catalog Curriculum Changes

1. **Added a new course ME 2030 – Introduction to Mechanical Design**

   Prerequisite: ENGR 1500 with a minimum C grade. Fundamentals of engineering design, use of computer-aided design (CAD) software, 2D drafting and 3D solid modeling, selected design projects, and operation of hand and machine tools. Lecture 2 hours. Laboratory 3 hours.

2. **Changed ME 3040 – Experimental Methods for Engineers from a 1-unit laboratory course to a 3-unit course (2-unit lecture and 1-unit laboratory)**

   Prerequisites: ME 2040 or EE 2040, MATH 2120 both with a minimum C grade. Introduction to experimental methods, sensors and data acquisition with emphasis on mechanical applications in biomedical engineering. Statistical methods for the analysis of experimental data. Survey of transducers and measurement methods for a broad range of phenomena relevant to biomechanical engineering applications. Oral and written communication of experimental results and analyses. Lecture 2 hours. Laboratory 3 hours.

   Note: all students who take ME 3040 in Fall 2018 or later will be taking the 3-unit course.

Fall 2018 Catalog Curriculum Changes

3. **Added Math 2550 – Introduction to Linear Algebra as a required course**
4. **Removed ME 2120 – Matrix Algebra and Statistics and Probability for Engineers**
5. **ME 4110 – Vibration Analysis replaces ME 4140 as the required 4000-level course**

   → *Still recommend students also take ME 4140 to prepare for industry and for the Professional Engineers (PE) Exam*
6. **Removed 5 units of Technical Electives** – Students will be required to take 6 units of technical electives (2 courses) rather than 11 units (4 courses). Of course, students can always opt to take additional technical electives.

All students on Fall 2016 or Fall 2017 curriculum may take either ME 4140 or ME 4110 as your required 4000-level course

For your required 4000-level course take either:

ME 4140 – Machine Design II

or

ME 4110 – Vibration Analysis

Students following Fall 2016 or Fall 2017 curriculum who want to count ME 4110 as their 4000-level required course must notify Andrea in the Department Office after they have successfully completed the course.

Transition guidelines for Fall 2018 ME BS curriculum

Your situation			Recommendation
Will have taken Senior Design (ME 4971/2) before Fall 2020	Will have taken ME 2120 or equiv. before Fall 2018	Will have taken 1-unit ME 3040 or equiv. before Fall 2018	
Yes	Yes	Yes	Do not move to Fall 2018 Curriculum. Take ME 4140 or ME 4110 and 4 upper division electives
Yes	Yes	No	Do not move to Fall 2018 Curriculum. Take ME 3040 (3 units), ME 4140 or ME 4110, and 3 upper division electives
Yes	No	Yes	Do not move to Fall 2018 Curriculum. Take CE 2120, ME 4140 or ME 4110, and 4 upper division electives
Yes	No	No	Do not move to Fall 2018 Curriculum. Substitute Math 2550 for ME 2120. Take ME 3040 (3 units), ME 4140 or ME 4110, and 3 upper division electives
No	No	No	Move to Fall 2018 Curriculum. Take ME 2030, ME 3040 (3 units), Math 2550, ME 4110 and 2 upper division electives
No	Yes	No	Move to Fall 2018 Curriculum. Substitute ME 2120 for Math 2550. Take ME 2030 (or the pilot courses this spring – see below), ME 3040 (3 units), ME 4110 and 2 upper division electives

Transition guidelines for Fall 2018 ME BS curriculum

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Yes	No	No	Do not move to Fall 2018 Curriculum. Substitute Math 2550 for ME 2120. Take ME 3040 (3 units), ME 4140 or ME 4110, and 3 upper division electives
No	No	No	Move to Fall 2018 Curriculum. Ta 2
No	Yes	No	M Su pi 4110 and 2 upper division electives

The department will move these students to the Fall 2018 catalog (in Fall 2018).

Major Specific Admissions Criteria (Fall 2018 and later)

Freshman admitted as pre-majors: must meet these requirements by the time they have completed 60 units in order to become an ME major

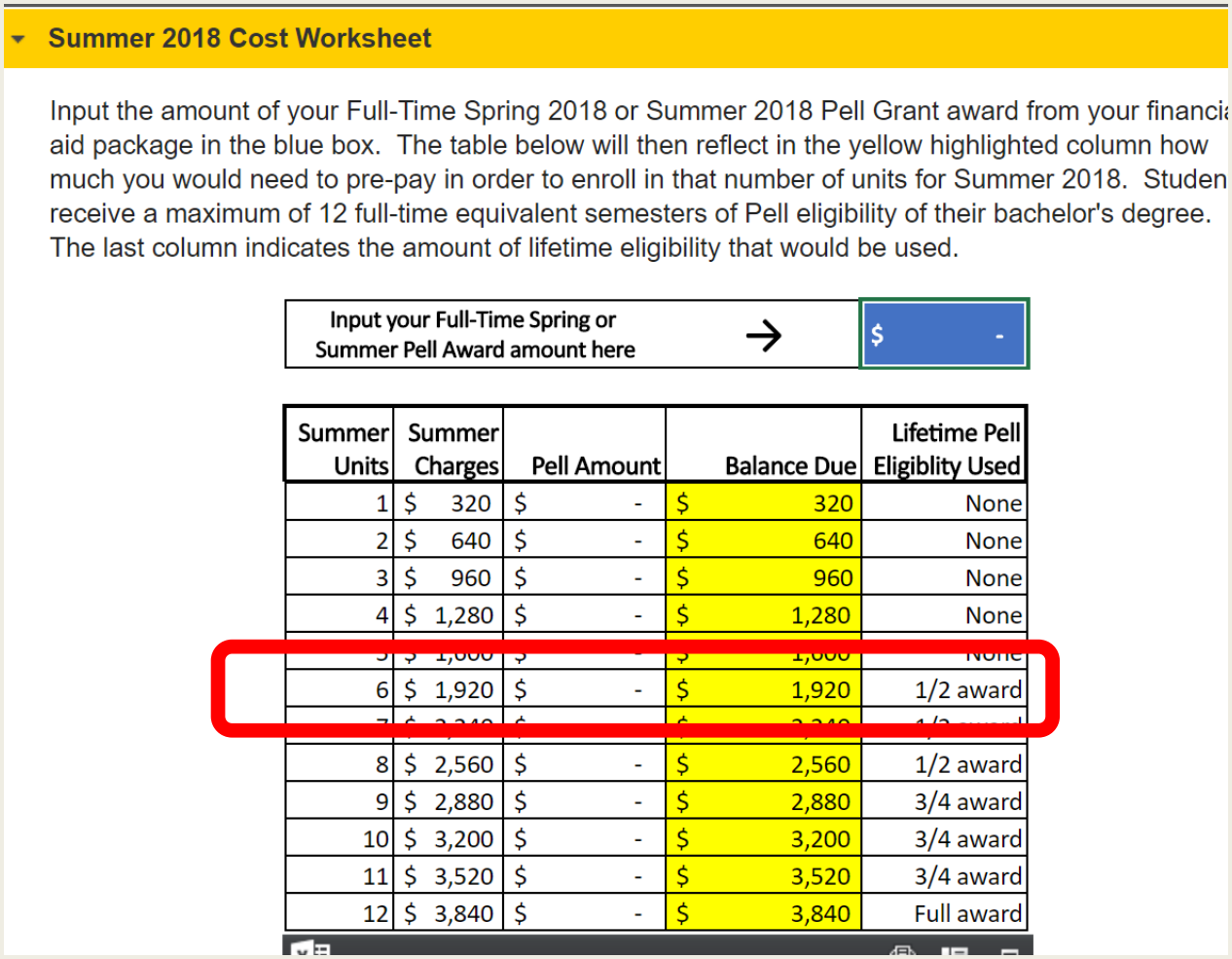
Mechanical Engineering

All transfer students:

- Required minimum cumulative GPA: 2.0
- Required major preparation courses (grade of "C" or b[illegible]):
  - MATH 2110 – Calculus I
  - CHEM 1040 – General Chemistry for Engineers; or CHEM 1100 – General Chemistry I
- Required General Education courses not covered by major preparation courses listed above:
  - Written Communication
  - Oral Communication
- Additional recommended preparation for transfer students (grade of "C" or better required)
  - MATH 2120 – Calculus II (required beginning Fall 2019)
  - PHYS 2100 – General Physics I: Mechanics and Thermodynamics (required beginning Fall 2019)
  - PHYS 2200 – General Physics II: General Physics and Optics
  - MATH 2130 – Calculus III

Financial Aid (Pell Grants) are available for summer!!

- Check out: http://www.calstatela.edu/financialaid/summer-pell-grant



Summer 2018 Cost Worksheet

Input the amount of your Full-Time Spring 2018 or Summer 2018 Pell Grant award from your financia aid package in the blue box. The table below will then reflect in the yellow highlighted column how much you would need to pre-pay in order to enroll in that number of units for Summer 2018. Studen receive a maximum of 12 full-time equivalent semesters of Pell eligibility of their bachelor's degree. The last column indicates the amount of lifetime eligibility that would be used.

Input your Full-Time Spring or Summer Pell Award amount here	→	$ -

Summer Units	Summer Charges	Pell Amount	Balance Due	Lifetime Pell Eligiblity Used
1	$ 320	$ -	$ 320	None
2	$ 640	$ -	$ 640	None
3	$ 960	$ -	$ 960	None
4	$ 1,280	$ -	$ 1,280	None
5	$ 1,600	$ -	$ 1,600	None
6	$ 1,920	$ -	$ 1,920	1/2 award
7	$ 2,240	$ -	$ 2,240	1/2 award
8	$ 2,560	$ -	$ 2,560	1/2 award
9	$ 2,880	$ -	$ 2,880	3/4 award
10	$ 3,200	$ -	$ 3,200	3/4 award
11	$ 3,520	$ -	$ 3,520	3/4 award
12	$ 3,840	$ -	$ 3,840	Full award

We will be offering courses during summer – here is what was offered last summer

SUBJ	CAT#	TOTAL	LIMIT	TITLE	DAYS	START	END
ME	2010	4	30	STATICS	TTR	10:15	12:08
ME	2050	10	30	STRENGTH OF MATERIALS I	MW	12:30	14:23
ME	2070	8	30	MATERIALS SCI & ENGINEERING	TTR	12:30	14:43
ME	3030	10	30	FLUID MECHANICS I	TTR	18:00	19:53
ME	3060	20	30	HEAT TRANSFER I	TTR	12:30	14:23
ME	3210	12	30	KINEMATICS OF MECHANISM	MW	14:45	16:38
ME	3230	14	30	MACHINE DESIGN I	TTR	10:15	12:08
ME	3261	8	30	THERMODYNAMICS I	MW	10:15	12:08
ME	3270	19	30	MANUFACTURING PROCESS	TTR	14:45	16:38
ME	4110	27	30	VIBRATION ANALYSIS I	MW	18:00	19:53
ME	4540	5	30	SPEC TOPIC IN MECH ENGINEERING	TTR	18:00	19:53
EE	3000	11	20	ECONOMICS FOR ENGINEERS	MW	18:00	19:53

Courses not offered in summer

- ME/EE/CE 3010 – Ethics and Professionalism in Engineering
  - *You must have already taken this course or currently be taking it in order to take ME 4971 in the Fall*
- ME/CE 2800 – Numerical Methods I
  - *You should plan to take before summer or you can take a first course in programming and do a course substitution*

Getting the most out of your education

- Join Student Organizations – in the department, college, and across the university!
  - *ASME, SHESS, SWE, NSBE, Tau Beta Pi, Pi Tau Sigma, and more!*
- Seek out opportunities to participate in research or design projects
  - *Competition Teams (Mini Baja, Formula SAE, Robosub, CubeSat, and more!)*
  - *Faculty Lead Research (Conduct research with faculty mentor, publish papers, attend conferences, and more!)*
  - *Internships (Get practical industry experience – Pay attention to emails from T. Fox and the ECST Newsletter for opportunities!)*
  - *REU – Research Experiences for Undergraduates – paid opportunities to conduct research at other universities!*

Getting the most out of your education (continued…)

- Attend the ECST Research Seminar Series (for credit or just for fun!)
- Attend professional development workshops on resume writing, interviewing skills (especially for technical interviews), mock interviews
- Seek out campus support resources (writing, tutoring, SI sessions, time-management, study skills, counseling, and more!)
- Branch out beyond engineering – explore all that the campus has to offer!

TIPS FOR SUCCESS

1. Make your **school work your #1 priority**
2. Study hard to achieve a high GPA and to avoid the need to repeat courses (28 unit repeat limit, 3 course repeat limit, and 18 unit withdraw limit)

   → High GPA gets your foot in the door, knowledge is what keeps you there
3. Use internet resources wisely (you need to use your critical thinking skills! Analogy – Waze or Google Maps)
4. Increase your time on campus – strong correlation to success!
5. Form study groups – learn from peers (best way to learn something is to teach/explain it to someone else)

   → *the library has some great collaborative learning spaces*
6. DON'T CHEAT!! Ultimately you're just wasting your own time and money.
7. Go to office hours and help sessions/SI sessions (with a friend!)
8. Take advantage of opportunities outside of the classroom!

Know your GPAs

- All three GPAs must be above a 2.0 to graduate
  - *Overall*
  - *Cal State LA*
  - *Major*
- Your GPA should be over a 3.0 to qualify for most internships and job
- Your GPA should be over a 2.75 to be accepted into the master's degree program at Cal State LA (you may be accepted conditionally with a GPA over 2.5)
- **Tip:** use grade forgiveness wisely! Replace your lowest grades (less than C)

Seriously consider continuing on in our master's program…

- Be more competitive in the job market
  - *More advanced knowledge*
  - *Strengthen your critical thinking skills*
  - *Raise your GPA*
- Conduct cutting-edge research with highly engaged faculty!
  - *Go to faculty office hours and learn about their research*
- Pursue your PhD!
  - *You can make a difference*
  - *Be a role model to others*

Questions???

- Contact Andrea Galvez in the department office (ET A205)
  - *323-343-4490*
  - *me.ecst@calstatela.edu*
- Speak with a faculty or staff advisor (advising hours listed online and outside of the department office)
- Contact Andrea to make an appointment with the Department Chair, Dr. Warter-Perez

Feedback always welcome!!

- *Course instruction (good and bad!)*
- *Course offerings/Curriculum*
- *Feedback on workshops/sessions*